

KALININ S. K.

172T69

USSR/Metals - Spectrography

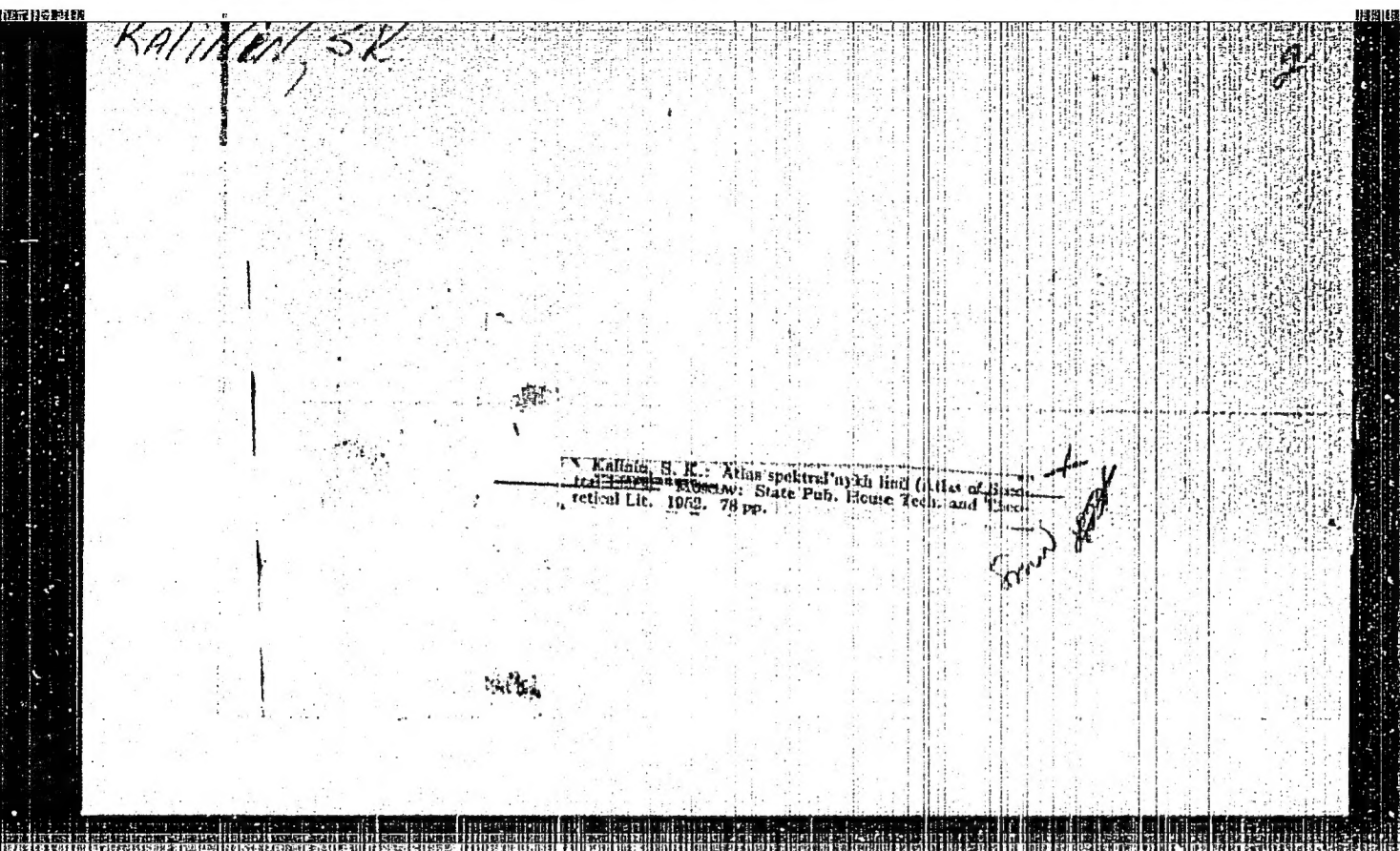
Sep/Oct 50

"Atlas of Spectral Lines for the Quartz Spectrograph.  
Within the Range 2,050-2,500 and 3,500-6,900 Å," S. K.  
Kalinin, A. I. Alekseyeva, A. A. Yavnel, L. E. Naymark,  
Inst of Astr and Phys, Acad Sci Kazakh SSR

"Iz Ak Nauk SSSR, Ser Fiz" Vol XIV, No 5, pp 701, 702

Subject atlas, necessary for processing of analyses,  
consists of 15 charts, giving Fe spectrum in 20-fold  
enlargement as reference.

172T69



KALININ, S.A.

KALININ, S.K.; YAVNEL', A.A.; NAYMARK, L.E.

[Tables of arc and spark spectra of iron from 2084 to 6546 Å] Atlas  
dugovogo i iskrovogo spektrov zheleza ot 2084 do 6546 Å. Moskva, Gos.  
nauchno-tekhn. izd-vo lit-ry po chernoi i tsvetnoi metallurgii, 1953.  
(MLRA 7:6)

(Iron) (Spectrum analysis--Tables, etc.)

Kalinin, S. K.

The content of some natural waters of Kazakhstan from spectrum-analytical data. I. P. Novokhatskiy and S. K. Kalinin (Acad. Sci. Kazakh. S.S.R., Alma-Ata). Doklady Akad. Nauk S.S.S.R. 63, 288-91 (1963). — The presence of F in waters was studied by the sharp green band, 5281.0 Å, which becomes visible with 0.05–0.1% F. Results obtained by spectroscopy were compared with chem. analysis data. High F content (> 1% in solid evap. residue) was found in the hot springs in Tien-Shan and in wells from granites and lakes in granite massives. No F was found in limestone-mine waters. W. M. Sternberg

USSR/ Miscellaneous - Spectral analysis

Card 1/1 Pub. 43 - 92/97

Authors : Kalinin, S. K.; Yavnel', A. A.; and Neymark, I. E.

Title : Atlas of Fe arc and spark spectra

Periodical : Izv. AN SSSR. Ser. fiz. 18/2, page 297, Mar-Apr 1954

Abstract : Notice is given about the publication in 1953 of an atlas listing all the arc and spark spectra for iron.

Institution : .....

Submitted : .....

KALININ, S.K.

USSR/ Physics - Spectrography

Card 1/1 Pub. 123-7/14

Authors : Kalinin, S. K., and Marzuvanov, V. L.

Title : ~~XXXXXXXXXX~~  
: New atlas of arc and spark spectra of Fe

Periodical : Vest. AN Kaz. SSR, 1, 59 - 61, Jan 1955

Abstract : The compilation of an atlas, showing the arc and spark spectrum of Fe in the most important zone of the spectrum, is announced. The first part of the atlas comprises the ultraviolet zone and is intended as an aid to quartz spectrography of average dispersion. The second part of the atlas intended for visible and infra red spectroscopy is now being completed. The atlas contains many illustrations showing arc and spark spectra of Fe obtained by means of the three-lens glass spectrograph ISP-51 with UF-84 camera. Two USSR references (1953 and 1954). Table; illustrations.

Institution: /....

Presented by: Tikhov, G. A. Memb. of Acad. of Sc. Kaz-SSR

KALININ, S.K.

Atlas of spectral lines for steel spectrographs. Izv. AN SSSR.  
Ser. Fiz. 19 no.1:42-44 Ja-F '55. (MLBA 8:9)

1. Fiziko-tekhnicheskii institut Akademii nauk KazSSR  
(Spectrum analysis) (Spectrometer)

KALININ, S.K.

BUYANOV, N.V., kandidat tekhnicheskikh nauk.

Review of the book "Atlas of arc and spark spectra of iron" by  
S.K.Kalinin, A.A.IAvel', L.E.Naimark. Reviewed by N.V.Buyanov.  
Zav.lab.21 no.9:1143 '55. (MLRA 9:1)

(Iron--Spectra) (Kalinin, S.K.) (IAvel, A.A.) (L.E.Naimark)



~~KALININ, S.K.~~; NAYMARK, L.E.; MARZUVANOV, V.I.; ISMAGULOVA, K.I.;  
RUSANOV, A.K., professor, doktor tekhnicheskikh nauk, redaktor;  
POTAPOV, V.S. redaktor izdatel'stva; GUROVA, O.A., tekhnicheskii  
redaktor

[Atlas of spectrum lines for a glass spectrograph; explanatory  
text and 26 diagrams] Atlas spektral'nykh linii dlia stekliannogo  
spektrografa; poiasnitel'nyi tekst i 26 planshetov. Pod red.  
A.K. Rusanova. Moskva, Gos. nauchno-tekhn. izd-vo lit-ry po geol.  
i okhrane nedr, 1956. 45 p., 26 l. (MIRA 10:4)  
(Spectrum analysis--Tables, etc.)

KALININ, S. K.

Category: USSR

D

Abs Jour: RZh--Kh, No 3, 1957, 7842

Author : Novokhatskiy, I. P. and Kalinin, S.K.

Inst :

Title : The Application of Spectroscopic Analysis to Geologic Investigations

Orig Pub: Vestn. AN KazSSR, 1956,<sup>12</sup> No 5, 13-21

Abstract: The fields of application of spectroscopic analysis in geological and geochemical investigations under Kazakhstan conditions are discussed. The following applications are recommended: (1) large-scale semiquantitative analysis of ores, minerals, and rocks; (2) determination of the composition of individual minerals; (3) prospecting for ores in the aureoles and solution paths; (4) identification and study of petrochemical and metallogenic districts; (5) study of the composition of natural waters.

Card : 1/1

-25-

KALININ, S. K.

USSR/Physics and Chemistry, Atom

B-3

"APPROVED FOR RELEASE: 08/10/2001

CIA-RDP86-00513R000620110005-6"

Abs Jour: Ref Zhur-Khimiya, No 5, 1957, 14341

Author : Grinman I. G., Kalinin S. K., and Murzuvanov V L.

Inst :

Title : The Problem of the Systematization of Atomic Spectra

Orig Pub: Vestn. AN KazSSR, 1956,<sup>12</sup> No 9, 85-89

Abstract: The notice reports the compilation of an atlas of mercury spectra by various authors. The atlas consists of three parts: (1) description of the series, systems of energy levels, (2) tables of wave lengths, energy levels, and line intensities, (3) photograph of the spectrum which includes the region of 2200-10140A. The spectrum of Hg III and of much higher degrees of ionization is not covered in the atlas.

Card 1/1

KALININ, S.K.

32-9-42/43

AUTHOR: None given

TITLE: New Books (Novyye knigi)

PERIODICAL: Zavodskaya Laboratoriya, 1957, Vol. 23, Nr 9, pp.1143-1143 (USSR)

ABSTRACT: The Application of Electron Microscopy. A collection of lectures delivered on the European Congress on the Application of Electron Microscopy. 1957, 166 pages, Roubles 6.40  
The Application of the Methods of Spectroscopy in the Food Industry and in Agriculture. Material dealing with the conference held on 4-7 July 1955 at Leningrad. 1957, 254 pages, Roubles 14.-  
Kalinin, S.K., Marzuvanov, V.L., Fayn, E.D. Spectral Lines for the Analysis of Mineral Raw Materials. 35 pages, 1957  
Sigorskiy, V.P., Sinititskiy, L.A. Magneto-Electric Logometers, 199 pages  
Devices for Measuring Electric and Magnetic Quantities. A collection of articles. 19 pages, 1957  
Popova, N.M. Phase-Chemical Steel Analysis. 1957, 39 pages  
Konokotin, S.G., Grechko, F.M. Semiconductor-Thermo-Telemeasuring Devices. 20 pages, 1957

Card 1/2

KALININ, S.K.; FAYN, E.Ye.; GRINMAN, I.G.; ZHILINSKIY, G.B.

Spectrographic determination of rare earths in minerals. Trudy  
Inst.iad.fiz.AN Kazakh.SSR 1:288-295 '58. (MIRA 12:2)  
(Rare earths--Spectra)

GRINMAN, I.G.; KALININ, S.K.; MARZUVANOV, V.L.; PAYN, N.Ye.

Investigation of the power of an electric arc for spectrum  
analysis. Trudy Inst.iad.fiz.AN Kazakh.SSR 1:296-302 '58.  
(Spectrum analysis) (Electric arc) (MIRA 12:2)

S. K. KALININ

24(7)

## PART I BOOK EXPLANATION

L'ov. Universitet

307/1700

Materialy I Vsesoyuznogo soveshchaniya po spektroskopii, 1956.  
 6. II. Atomnaya spektroskopiya (Materials of the 10th All-Union  
 Conference on Spectroscopy, 1956. Vol. 2: Atomic Spectroscopy)  
 Sov. Ind.-vo L'vovskogo univ., 1958. 565 p. (Series: Isa)  
 Pishchetskiy sbornik, 77p. N(9)) 3,000 copies printed.

Additional Sponsoring Agency: Akademiya nauk SSSR, Komissiya po  
 spektroskopii.

Editorial Board: G.S. Landsberg, Academician, (Sov. Mi.);  
 S.S. Reporent, Doctor of Physical and Mathematical Sciences;  
 I.L. Fabelinsky, Doctor of Physical and Mathematical Sciences;  
 V.G. Pavlyutsky, Candidate of Physical and Mathematical Sciences;  
 G.S. Landsberg, Candidate of Physical and Mathematical Sciences;  
 S.M. Baryshev, Candidate of Physical and Mathematical Sciences;  
 L.K. Kimovskaya, (Donetsk), Doctor of Physical and Mathematical Sciences;  
 V.S. Kilyanchuk, (Leningrad), Doctor of Physical and Mathematical Sciences;  
 A.Ye. M.I. S.L. Gaser, Tech. Mi.; I.V. Saranyuk.

PURPOSE: This book is intended for scientists and researchers in  
 the field of spectroscopy, as well as for technical personnel  
 using spectrum analysis in various industries.

COVERAGE: This volume contains 177 scientific and technical studies  
 of atomic spectroscopy presented at the 10th All-Union Confer-  
 ence on Spectroscopy in 1956. The studies were carried out by  
 members of scientific and technical institutes and include  
 extensive bibliographies of Soviet and other sources. The  
 studies cover many phases of spectroscopy: spectra of rare earths,  
 electromagnetic radiation, physicochemical spectra of rare earths,  
 uranium production, physics and technology of gas discharge  
 spectra and spectroscopy, abnormal dispersion in metal vapors,  
 and mineralogy. The book also contains a section on the controlling  
 analysis of metals and alloys, spectral determination of ores  
 hydrogen content of metals by means of isotopes, tables, and  
 atlases of spectral lines, spark spectrographic analysis,  
 statistical study of variation in the parameters of calibration  
 curves, determination of traces of metals, spectrum analysis in  
 metallurgy, thermochemistry in metallurgy, and principles and  
 practice of spectrochemical analysis.

Card 2/31

Materials of the 10th All-Union Conference (Cont.)

307/1700

Belasov, B.G., and A.M. Saltykova. Spectrographic  
 Determination of Tin, Lead, Antimony, and Cadmium in  
 Titanium, Zirconium, Tantalum, and Niobium

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Rusanov, A.K., and M.V. Il'yasova. Atlas for the Identification  
 of Flame Spectra of Elements of 2,000-9,000 Å Wavelengths

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Alkseyeva, A.I., I.G. Grisman, S.K. Kalinin, Yu. A. Rubnikov,  
 and V.L. Martynov. First Edition of the Spectral Atlas  
 of Elements: The Mercury Spectrum

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Gurevich, I.M. The DIP-1 Pulse Photometer for Measuring  
 Instantaneous Luminous Flux

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Sherstkov, Yu. A., and M.M. Potkov. Photoelectric Method  
 for Recording Contours of Spectral Lines in a D-C Arc

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Borff, O.P.; A.I. Rykov, and D.A. Shalover. Spectral Charac-  
 teristics of Ultraviolet Radiation Sources and Receivers

190

Card 12/31

KALININ, S.K.; MARZUVANOV, V.L.; FRISH, S.M., red.; EVANSON, I.M., tekhn.  
red.

[Atlas of spark and arc spectra for iron from 3718 to 9739 Å] Atlas  
dugovogo i iskrovogo spektrov zheleza ot 3718 do 9739 Å. Pod red.  
S.M. Frisha. Moskva, Gos. nauchno-tekhn. izd-vo lit-ry po chernoj  
i tsvetnoi metallurgii, 1958. 47 p. and 21, xvii plates (in  
portfolio). (MIRA 11:10)

1. Chlen-korrespondent Akademii nauk SSSR (for Frish).  
(Iron—Spectra)

KALININ, S. K.

with E. Ye. Fayn, I. G. Grinman, and G. B. Zhilinskiy "Spectroscopic  
Determination of Rare Earths in Minerals"

with I. G. Grinman, V. L. Marzuvanov, and E. Ye. Fayn "Study of Electric-arc  
Output for Spectrum Analysis"

Transactions of the Inst. of Nuclear Physics, Kazakh SSR, Acad. Sci. Trudy, v. i.,  
Alma-Ata, Izd-vo AN Kaz SSR, 1958,

This vol. contains results of research at the Inst. of Nuclear Physics for the  
years 1954-56.



KALININ, S.K.; MARZUVANOV, V.L.

Characteristics of arc discharges in an atmosphere of chlorine.  
Vest. AN Kazakh.SSR 14: no.9:73-81 S '58. (MIRA 11:11)  
(Electric discharges through gases) (Chlorine)

24(4)

PHASE I BOOK EXPLOITATION

SOV/3309

Akademiya nauk Kazakhskey SSR. Fiziko-tekhnicheskii institut

Atlas spektra rtuti (Atlas of Mercury Spectrum) Alma-Ata, Izd-vo AN Kazakhskey SSR, 1959. 1. v. [10 plates in pocket] 1,000 copies printed.

Compilers: A.I. Alekseyeva, I.G. Grinman, S.K. Kalinin, Yu.A. Kushnikov, and V.L. Marzuvanov; Eds.: S.K. Frish, Professor, Corresponding Member, USSR Academy of Sciences, and R.I. Suvorova; Tech. Ed.: Z.P. Rorokina.

**PURPOSE:** The publication is intended as a reference book for scientific research workers and engineers.

**COVERAGE:** The atlas contains photos of the mercury spectrum in the ultraviolet region, made on quartz spectrograph ISP-22 (magnified 8 times) and in the infrared region, made on spectrograph ISP-51 with long-focus camera (magnified 6 times). The explanatory table indicates wavelength, wave numbers,

Card 1/2

PHASE I BOOK EXPLOITATION

SOV/4045

Kalinin, S.K., A.A. Yavnel', A.I. Alekseyeva, V.L. Marzuvanov, and L.E. Naymark

Atlas spektral'nykh liniy dlya kvartseвого spektrografa (Atlas of Spectral Lines for the Quartz Spectrograph). Moscow, Gosgeoltekhizdat, 1959. 43 p.  
23 charts [in portfolio] Errata slip inserted. 5,000 copies printed.

Sponsoring Agency: Akademiya nauk Kazakhskoy SSR. Fiziko-tekhnicheskiy institut.

Ed. of Publishing House: V.G. Filatov; Tech. Ed.: O.A. Garova.

**PURPOSE:** This work is intended for use in spectral analysis laboratories, scientific institutions, industrial and geological laboratories, and other similar research establishments.

**COVERAGE:** This atlas of spectral lines, published under the auspices of the Commission on Spectroscopy of the Academy of Sciences, USSR, consists of a booklet and 23 photographic plates. The booklet contains quartz spectrograph spectral lines for 72 elements and tables on the excitation potentials of the lines and the ionization potentials of the elements which have great significance for the selection of analytic lines in quantitative spectral analysis.

Card 1/6

Atlas of Spectral Lines for the Quartz Spectrograph

SOV/4045

The tables contain information on the overlapping of analytic lines by the lines of other elements. They can also be used in the spectral analysis of rocks, ores, minerals, soils, metals, and alloys. The atlas was composed by means of the ISP - 22 quartz spectrograph (the new model is the ISP - 28) and the PS - 18 spectroprojector. It is able to reproduce exactly the dimensions and forms of a spectrum obtained in most Soviet laboratories and can also be used with other average-dispersion devices whose parameters resemble closely the ISP - 22 spectrograph (Q - 24, E - 438, etc). The atlas makes it possible to break down the spectrum of various materials into the 72 elements in the whole range of the spectrum recorded by the spectrograph (2050 - 6800 Å). The authors thank S.L. Mandel'shtam, Professor A.K. Rusanov, and S.M. Rayskiy. There are 25 references: 14 Soviet, 6 English, 3 German, 1 French and 1 Italian.

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SOV/48-23-9-4/57

AUTHORS: Kalinin, S. K., Marzuvanov, V. L., Payn, E. Ye., Zamyatina,  
~~G. M.,~~ Perevertun, V. N., Terekhovich, S. L.

TITLE: Atlas of Spectral Lines for a Spectrograph With Diffraction  
Grating

PERIODICAL: Izvestiya Akademii nauk SSSR. Seriya fizicheskaya, 1959,  
Vol 23, Nr 9, pp 1061-1063 (USSR)

ABSTRACT: In connection with the series production of diffraction grat-  
ing spectrographs, the necessity of methodical directives  
and of atlases is pointed out. At present, the authors are  
preparing an atlas of spectral lines for grating spectrographs.  
The atlas consists of plane tables (planshet) and of their  
descriptions. In figure 1, for example, the iron spectrum in  
a range extending over  $66 \text{ \AA}$  is shown. This spectrum was record-  
ed by means of the DFS-3 spectrograph, the grating of which  
has 300 grating lines per mm. The spectra recorded were en-  
larged 20 times and the lengths of the plane tables amount  
to 370 mm, so that, for example, the entire iron spectrum has  
a total length of 25 m. Owing to the high dispersion of the  
instrument about 7000 lines of 85 elements are recorded, and  
the intensity of the lines is estimated according to a 12-degree

Card 1/2

SOV/48-23-2-4/57

Atlas of Spectral Lines for a Spectrograph With Diffraction Grating

scale; if the sample contains more than 10% of the element, the lines are marked by the figure 1, and if it contains less than 0.0001%, by the figure 12. In the description the properties of the lines are discussed, and directives are given for carrying out analyses. There are 1 figure and 3 Soviet references.

ASSOCIATION: Institut yadernoy fiziki Akademii nauk KazSSR  
(Institute of Nuclear Physics of the Academy of Sciences  
of the Kazakhskaya SSR)

Card 2/2

PHASE I BOOK EXPLOITATION

SOV/4570

Kalinin, Sergey Ksenofontovich

Primeneniye difraktsionnogo spektrografa DFS-3 (13) dlya analiza mineral'nogo syr'ya (Use of the DFS-3(13) Diffraction Spectrograph for the Analysis of Mineral Raw Materials) Alma-Ata, Izd-vo AN Kazakhskoy SSR, 1960. 35 p. 1,000 copies printed.

Sponsoring Agency: Akademiya nauk Kazakhskoy SSR.

Ed.: K.Kh. Barlybayeva; Tech. Ed.: V.P. Prokhorov.

PURPOSE: This book is intended for spectroscopy specialists working in the analysis of ores, minerals, and alloys.

COVERAGE: This work describes analysis techniques with a high-dispersion diffraction spectrograph. The characteristic optical properties of the instrument are given. The authors discuss experience in using this instrument in the determination of small quantities of individual elements, bismuth, tungsten, germanium, rhenium, thallium, zinc, etc., as well as various spectrographs developed and produced by Soviet industry. This book gives the results of an investigation of the characteristics of a DFS-13 type spectrograph and compares them

Card 1/3

Use of the DFS-3 (Cont.)

SOV/4570

with the characteristics of known prismatic spectrographs. Special attention is given to the possibilities of using such instruments in the spectral analysis of mixed-composition samples (mainly ores). The authors used the DFS-3 spectrograph in their investigations, but their conclusions are applicable to the DFS-13. The Preface was written by Professor V.K. Prokof'yev, Honored Scientist and Technician of the RSFSR. There are 16 references, all Soviet.

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PHASE I BOOK EXPLOITATION SOV/4405

Kalinin, Sergey Ksenofontovich, Vasilii Leonidovich Marzuvanov,  
Lyubov' Efroyimovna Naymark, and Kul'tay Ismagulovna  
Ismagulova

Atlas spektral'nykh liniy dlya steklyannogo spektrografa (Atlas of Spectrum Lines for the Glass Spectrograph) [2d ed., rev.] Alma-Ata, Izd-vo AN KazSSR, 1960. 61 p. Errata slip inserted. 2,000 copies printed.

Sponsoring Agency: Akademiya nauk Kazakhskoy SSR.

Ed.: V. V. Aleksandriyskiy; Tech. Ed.: Z. P. Rorokina.

PURPOSE: This atlas is intended for spectroscopy experts working on the analysis of ores, metals, and alloys.

COVERAGE: The atlas contains photographs of an arc spectrum of iron in the range of 3718-9010 Å on which the location of more than 1,300 of the most intensive spectral lines of 81 elements, including inert gases and plutonium, are recorded. Wavelength tables of spectrum lines include

Card ~~1~~/10

Atlas of Spectrum Lines (Cont.)

SOV/4405

excitation and ionization potentials. Detailed description of the atlas and instructions on its use in spectral analysis are also given. Soviet equipment, namely, a three-prism glass spectrograph ISP-51 with a UF-84 chamber and a PS-18 spectroprojector, was used in compiling the atlas which is intended for rapid interpretation of the visible and near infrared regions of the spectra of rocks, ores, soils, natural waters, metals, alloys, and biological materials. The Editor's Preface was written by A. K. Rusanov, Professor, Doctor of Technical Sciences. The Institut yadernoy fiziki Akademii nauk Kazakhskoy SSR (Nuclear Physics Institute of the Academy of Sciences, Kazakh SSR) is the sponsoring agency. The authors thank A. R. Striganov, S. M. Rayskiy, N. S. Sventitskiy, and V. G. Koritskiy. There are 119 references: 112 Soviet, 6 English, and 1 German.

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Card 2/10

SATPAYEVA, T.A.; KALININ, S.K.; FAYN, E.Ye.

Amount of osmium in ores of the Dzhezkazgan deposit. Vest.AN  
Kazakh.SSR 16 no.8:29-31 Ag '60. (MIRA 13:9)  
(Dzhezkazgan District--Osmium)

KALININ, Sergey Ksenofontovich; FAYN, Emil' Yefraimovich; STRIGANOV,  
A.R., doktor fiziko-matem. nauk, prof., otv. red.; RZHONDKOVSKAYA,  
L.S., red.; ALFEROVA, P.F., tekhn. red.

[Spectrum analysis of raw minerals] Spektral'nyi analiz mineral'-  
nogo syr'ia. Alma-Ata, Izd-vo Akad. nauk Kazakhskoi SSR, 1962.  
238 p. (MIRA 15:7)

(Minerals--Analysis) (Spectrum analysis)

S/031/62/000/012/002/002  
B142/B186

AUTHORS: Satpayeva, T. A., Kalinin, S. K., Satpayeva, M. K.,  
Marzuvanov, V. L.

TITLE: Peculiarities of rhenium manifestation in ores from the  
Dzhezkazgan deposit

PERIODICAL: Akademiya nauk Kazakhskoy SSR. Vestnik, no. 12 (213),  
1962, 58-65

TEXT: Re is widely spread in the copper deposit mentioned in the form  
of an independent mineral in a thin-dispersed state. The occurrence  
extends over the whole deposit and veinlets and spots are particularly  
frequent in highly mineralized sections. The rhenium mineral is bound  
to hypogenic bornite-chalcocite ores separated toward the end of the first  
copper mineralization period. In the solution that liberated pure  
bornite, the rhenium was, in part, highly concentrated, so that rhenium  
mineral of spongy structure was precipitated in the bornite. It was only  
toward the end of the bornite-chalcocite sedimentations that small amounts  
of the rhenium mineral were separated as finest, pure grains and

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Peculiarities of rhenium ...

S/031/62/000/012/002/002  
B142/B186

constituted replacement structures in the bornite and in the accompanying rutile. The following properties were found: Color: pale pink - cream, on small magnification. On higher magnification, darker, brown, blurred spots became visible in the bright ground mass; they were identified by electron microscope as finest intergrowths of rhenium mineral with bornite. Reflecting power:  $\sim 30\%$  in the bright sections, 26-27% in the dark spots, depending on the wavelength. Microhardness: 208.7-261.0 kg/mm<sup>2</sup>. Optics: very weakly anisotropic. Etching: concentrated HNO<sub>3</sub> does not

change the bright parts of the Re mineral, but only the dark spots. 20% KCN solution colors the surface slightly brown. A local spectrum analysis showed that the Re to Mo ratio was more stable than the ratio of Re to other ore-forming elements. The chemism could not be determined since the x-ray spectrum microanalyzer covers a volume of 3-10  $\mu^3$  which, in the case of Re mineral, already comprises bornite and chalcocite inclusions. The Re mineral showed the same structure in the polarizing and the electron microscopes: finest Re mineral veins at the edge of the bornite grains are entangled, and increasingly so toward the middle, forming a dense network with the bornite in its meshes. This makes it impossible to isolate the Re mineral chemically, hence the measured

Card 2/3

Peculiarities of rhenium ...

S/031/62/000/012/002/002  
B142/B186

physical data are of doubtful dependability. A study of the Re mineral intergrowths with rutile might help here, but hitherto it has been possible to render them visible, only by immersion in oil, which made the measurements difficult. The results show that this is an independent Re mineral for which the name "dzhezkazganite" has been proposed. There are 33 figures and 2 tables.

ASSOCIATION: AN KazSSR (AS KazSSR); Dzhezkazganskiy gorno-metallurgicheskiy kombinat (Dzhezkazgan Mining and Metallurgical Combine)

Card 3/3

L 36249-65  
ACCESSION NR: AT5007815

optical density of complexes formed by the rare earth elements with Arsenic



KALININ, S.K.; MARZUVANOV, V.L.; MUKHTAROV, S.M.

[Atlas of the arc spectrum of iron] Atlas dugovogo  
spektra zheleza. Moskva, Metallurgiya, 1965. 54 plates  
in folder. — [Text] 55 p. (MIRA 19:1)

KALININ, S. M.

"Effect of Fertilizers on the Potato Crop in the Southeast." Cand Agr Sci, Saratov  
Agricultural Inst, Saratov, 1953. (RZhPriol, No 1, Sep 54)

SO: Sum 432, 29 Mar 55

KALININ, S. I.  
USSR, Nuclear Physics - Tritium

FD-2337

Card 1/2 Pub. 146 - 2/34

Author : Vlasov, N. A.; Kalinin, S. P.; Ogloblin, A. A.; Samoylov, L. N.;  
Sidorov, V. A.; and Chuyev, V. I.

Title : Interaction of protons with tritium, and the excited state of  
helium-4

Periodical : Zhur. eksp. i teor. fiz. 28, 639-650, Jun 1955

Abstract : The authors describe experiments investigating the reactions  $T(pn)$   
 $He^3$  and  $T(py)He^4$  in the interval of proton energies up to 7 Mev.  
The energy of the protons in the beam from the cyclotron chamber  
was varied by way of slowing in lead filters. Serving as detec-  
tors of the neutrons were so-called all-wave counter and uranium  
chamber; a scintillational counter served as detector of the gamma  
rays, with NaI(Tl). The curve of cross-section,  $\sigma$ , versus  
proton energy,  $E_p$ , for the first reaction possesses a maximum at  
 $E_p \approx 3$  Mev. For the second reaction the cross-section increases  
monotonically in the entire energy interval. Also investigated  
were the angular distributions of neutrons and gamma rays. The  
characteristics of the excited state of helium-4 are discussed.  
The authors thank the associates of the Cyclotron Laboratory, and

USSR/Nuclear Physics - Tritium

FD-2337

Card 1/2 Pub. 146 - 2/34

Author : Vlasov, N. A.; Kalinin, S. P.; Ogloblin, A. A.; Samoylov, L. N.; Sidorov, V. A.; and Chuyev, V. I.

Title : Interaction of protons with tritium, and the excited state of helium-4

Periodical : Zhur. eksp. i teor. fiz. 28, 639-650, Jun 1955

Abstract : The authors describe experiments investigating the reactions  $T(pn)$   $He^3$  and  $T(py)He^4$  in the interval of proton energies up to 7 Mev. The energy of the protons in the beam from the cyclotron chamber was varied by way of slowing in lead filters. Serving as detectors of the neutrons were so-called all-wave counter and uranium chamber; a scintillational counter served as detector of the gamma rays, with NaI(Tl). The curve of cross-section,  $\sigma$ , versus proton energy,  $E_p$ , for the first reaction possesses a maximum at  $E_p=3$  Mev. For the second reaction the cross-section increases monotonically in the entire energy interval. Also investigated were the angular distributions of neutrons and gamma rays. The characteristics of the excited state of helium-4 are discussed. The authors thank the associates of the Cyclotron Laboratory, and

"APPROVED FOR RELEASE: 08/10/2001

CIA-RDP86-00513R000620110005-6



APPROVED FOR RELEASE: 08/10/2001

CIA-RDP86-00513R000620110005-6"

*Kalinin S. P.*

USSR/Nuclear Physics - Structure and Properties of Nuclei

C-4

Abst Journal : Referat Zhur - Fizika, No 12, 1956, 33990

Author : Bogdanov, G. F., Vlasov, N. A., Kalinin, S. P., Rybakov, B. V.  
Sidorov, V. A.

Institution: None

Title: Spectra of Neutrons Bombarded with T and D Deuterons with  
Energies of 14 Mev

Original

Periodical: Zh. eksperim. i teor. fiziki, 1956, 30, No 1, 185-187

To check the existing experimental data on the existence of an excited state of approximately 2 Mev in the  $\text{He}^4$  nucleus, spectra were studied of neutrons produced by the  $\text{T(d,n) He}^4$  and  $\text{D(d,n) He}^3$  reactions, with the neutrons escaping at an angle of  $0^\circ$  relative to the beam of the deuterons. The beam of the 14 Mev deuterons was focused with the aid of a magnetic prism at a distance of 12 m from the cyclotron, where a thin tritium-zirconium or a gas deuterium target was placed. The energy of the neutrons

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USSR/Nuclear Physics - Structure and Properties of Nuclei

C-4

Abst Journal : Referat Zhur - Fizika, No 12, 1956, 33990

was measured from the time it took them to cover the distance from the target to the counter, the latter being a photomultiplier with a solid solution of terphenyl in polystyrol acting as a phosphor. The neutron source was operating under pulse conditions based on the natural modulation of the cyclotron beam. The pulses from the counter went to a germanium-diode coincidence circuit. Pulses, synchronized with the accelerating voltage of the cyclotron were applied to the second leg of the coincidence circuit. The time resolution of this spectrometer (width of gamma line at half the altitude) amounted to 7 nμseconds.

The spectrum of the neutrons from the  $T(d,n)He^4$  and  $D(d,n)He^3$  reactions displayed not only the maxima corresponding to the formation of the  $He^4$  and  $He^3$  nuclei in their fundamental states but also wide groups of slower neutrons with an average of energy of 8 Mev. For the  $T + d$  reaction this energy corresponds to an excitation energy of finite nucleus of approximately 22 Mev. However, the similarity of the spectra in

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USSR/Nuclear Physics - Structure and Properties of Nuclei

C-4

Abst Journal : Referat Zhur - Fizika, No 12, 1956, 33990

the case of both reactions is indication in favor of the assumption that the second groups of neutrons are formed faster by a break-up of the deuteron than by the usual reaction with a formation of a finite nucleus  $\text{He}^4$  and  $\text{He}^3$  in excited state. Notice is taken of the large value of the cross section for the formation of the neutrons of the second groups. This amounts to 300 millibarns/steradian for the case of the  $T + d$  reaction, and 100 millibarns/steradian for the case of the  $D + d$  reaction.

Card 3/3

KALININ, S.P.

Category : USSR/Nuclear Physics - Nuclear Reactions

"APPROVED FOR RELEASE: 08/10/2001" CIA-RDP86-00513R000620110005-6"

Abs Jour : Ref Zhur - Fizika, No 2, 1957 No 3252

Author : Bogdanov, G.F., Vlasov, N.A., Kalinin, S.P., Rybakov, B.V., Sidorov, V.A.  
Title : Spectra of Neutrons Produced by Bombarding Light Nuclei with 14 Mev Deuterons.

Orig Pub : Zh. eksperim. i teor. fiziki, 1956, 30, No 5, 981-983

Abstract : Using the time of flight method, a measurement was made of the spectra of neutrons produced by bombarding thin targets of  $\text{H}$ ,  $\text{He}^3$ ,  $\text{He}^4$  ( $E_d$  13.0 Mev) and  $T$  (in zirconium),  $\text{Li}$ ,  $\text{Be}$ ,  $\text{B}$ ,  $\text{C}$ ,  $\text{Cu}$  ( $E_d$  14.4 Mev) produced by bombardment with a beam of deuterons from a cyclotron. The measurements were made at an angle of  $0^\circ$  to the deuteron beam. The reactions  $T + d$  and  $\text{He}^3 + d$  differ both in the shape of the neutron spectrum, as well as in the value of the cross section (in the former case the cross section is almost three times greater). This confirms the existence of an excited state with excitation energy of 22 Mev in the  $\text{He}^4$  nucleus and indicates the absence of a similar state in the  $\text{Li}^4$  nucleus. Consequently, the isotopic spin of the excited state of  $\text{He}^4$  is zero. It is noted that the neutron spectrum of the reaction  $\text{He}^3 + d$  does not display the hypothetical level of the  $\text{Li}^5$  nucleus with an approximate excitation

Card : 1/2



KALININ, S. P., YLASHOV, N. A., PODDAROV, G. P., NISANOV, B. V., and LIDOKOV, V. A.

"The Spectra of the Fast Neutrons from (P,n) reactions are Measured on the 1.5 Meter Cyclotron by the Time-of-Flight Method," a paper presented at the International Conference on the Neutron Interactions with the Nucleus, New York City, 9-13, Sep 57.

Abstract Available in C-3,800,344

SELENIUM, S. P., VINOBY, N. A., BOGDANOV, G. P., NIKOLAY, B. V., and SIDOROV, Y. I.

"Time-of-Flight Analysis of the Reaction of 18 Mev Deuterons with Light Nuclei," a paper submitted at the International Conference on the Neutron Interactions with the Nucleus, New York City, 2-13 Sep 57.

Abstract Available in C-3,800,344

KALININ, I.P., ARTEMOV, K.P., BOGDANOV, G.F., RYBAKOV, B.V., SILEDOV, V.A.,  
VLASOV, V.A.

"Spectra of Neutrons and Protons from ( $\text{He}^4 + d$ ) Reaction and Energy Levels of  $\text{Li}^7$  and  $\text{He}^5$ ."

paper submitted at the All-Union Conf. on Nuclear Reactions in Medium and Low Energy Physics, Moscow, 19-27 November 1957.

paper submitted at the All-union Conf. on Nuclear Reactions in Medium and Low Energy Physics, Moscow, 19-27 November 1957.

KALININ, S. P.

AUTHOR: NEMENOV, L.M., KALININ, S.P., KONDRASHOV, L.F., MIRONOV, E.S., PA - 2194  
NAUMOV, A.A., PNASJUK, V.S., FEDOROV, N.D., CHALDIN, N.N.,  
CUBAKOV, A.A.

TITLE: A one-and-a-half meter cyclotron with constant frequency.

PERIODICAL: Atomnaya Energiya, 1957, Vol 2, Nr 1, pp 36 - 41.

Received: 3 / 1957

Reviewed: 3 / 1957

ABSTRACT: The building of this cyclotron was projected in 1945 and was completed in 1946. The first deuteron ray from this cyclotron was obtained in 1947. The accelerator was completely surrounded by a water jacket of 1 m thickness and a great number of operations which are dangerous because of radiation were remote-controlled. This cyclotron was used for the study of nuclear processes occurring in the cyclotron itself. Apart from deuterons,  $\alpha$ -particles, and ions, also protons and multiply charged nitrogen ions were accelerated by means of this cyclotron.

The electromagnet: The magnetic chain consists of a closed frame of square cross-section with pole shoes. The operation diameter of the pole is 1500 mm. The electromagnet is air-cooled. Total weight is 330 t. By means of this electromagnet field strengths of up to 18.000 Oersted can be produced in the intermediate space between the pole shoes.

Card 1/3

The resonance system and the high frequency generator: The resonance

PA - 2194

A one-and-a-half meter cyclotron with constant frequency.

acceleration chamber is warranted by three oil vapor pumps.

In conclusion the deflection system and the focussing of a bundle on to a distant target is discussed.

By means of this cyclotron protons were accelerated up to 12,2 MeV, deuterons up to 19,6,  $\alpha$ -particles and nitrogen ions up to 39,2 and 120 MeV respectively.

ASSOCIATION: Not given.

PRESENTED BY:

SUBMITTED:

AVAILABLE: Library of Congress.

Card 3/3

The Excitation Curves of the Reactions PA - 2262  
 $Mg^{24}(d,\alpha)Na^{22}$ ,  $Fe^{54}(d,\alpha)Mn^{52}$ ,  $Fe^{54}(d,n)Co^{55}$ , and  $Zn^{66}(d,2n)Ga^{66}$ .  
and  $Ga^{66}$  at the last two reactions were given. (5 illustrations)

ASSOCIATION: Not given.  
PRESENTED BY:  
SUBMITTED: 13.10.1956.  
AVAILABLE: Library of Congress.

Card 3/3

The Excitation Curves of the Reactions  $\text{Li}^7(\text{p},\text{n})\text{Be}^7$ ,  $\text{B}^{10}(\text{p},\alpha)\text{Be}^7$ ,  $\text{B}^{11}(\text{p},\text{n})\text{C}^{11}$  and the Energy Levels of the Nuclei of  $\text{Be}^8$ ,  $\text{C}^{11}$ , and  $\text{C}^{12}$ . <sup>PA - 2263</sup>

curves of the reactions  $\text{Li}^7(\text{p},\text{n})\text{Be}^7$  and  $\text{B}^{10}(\text{p},\alpha)\text{Be}^7$  were obtained from the  $\gamma$  - activity of the  $\text{Be}^7$  and the excitation curves of the reaction  $\text{B}^{11}(\text{p},\text{n})\text{C}^{11}$  from the annihilation radiation of the  $\text{C}^{11}$ . Also the measuring of these activities is discussed. The thus obtained excitation curves are shown in diagrams.

The excitation curve of the reaction  $\text{Li}^7(\text{p},\text{n})\text{Be}^7$  shows maxima at the proton energies of 4,9, 6,0, and 7,6 MeV, which correspond to the known levels of the nucleus  $\text{Be}^8$  with the excitation energies 21,5, 22,5, and 23,85 MeV. Besides, curvatures are noticed in the course of the excitation curve at the proton energies 8,8 and 9,5 MeV as well as in the domain of 3,5 MeV. These curvatures are probably known by hitherto not known levels of the excitation energy in the  $\text{Be}^8$ -nucleus.

The excitation curve of the reaction  $\text{B}^{10}(\text{p},\alpha)\text{Be}^7$  has distinct maxima at the proton energies of 4,0 and 5,6 MeV. The first of these resonances corresponds to the known level of 12,3 MeV of the  $\text{C}^{11}$ -nucleus. The second resonance can be explained by the existence

Card 2/3

AUTHOR BOGDANOV, G.F., VLASOV, N.A., KALININ, S.P., RYBAKOV, B.7., 89-9-2/32  
 SIDOROV, V.A.  
 TITLE The  $\text{Li}(p,n)\text{Be}$  reaction and the Fundamental Structure of the  $\text{Be}^6$   
 Nucleus.  
 (Reaktsiya(p,n) na litii i osnovnoye sostoyaniye yadra  $\text{Be}^6$ )  
 PERIODICAL Atomnaya Energiya, 1957, Vol 3, Nr 9, pp 204 - 210 (U.S.S.R.),  
 ABSTRACT By means of the time of flight method the neutron spectrum emitted.  
 by the reactions  $\text{Li}^6+p$  and  $\text{Li}^7+p = 9 \text{ MeV}$  is measured. Further, the  
 redistribution of neutrons and the reaction cross sections were mea-  
 sured. The results are  
 1)  $\text{Li}^6(p,n)\text{Be}^6$   
 a)  $Q_0 = -5,2 \pm 0,2 \text{ MeV}$   
 b) the natural breadth of the ground state  $\Gamma < 0,3 \text{ MeV}$   
 c) angular distribution of neutrons:  $\sigma(\theta) = 0,19 + 0,23 \cos(\theta) +$   
 $+ 0,70 \cos^2(\theta) \text{ mb/steradian}$   
 d) mass defect of  $\text{Be}^6 = 20,3 \pm 0,2 \text{ MeV}$   
 e) Reaction cross section for the ground state at  $E_p = 9 \text{ MeV}$   $\sigma = 5 \pm 1 \text{ mb}$   
 2)  $\text{Li}^7(p,n)\text{Be}^7$   
 a) The neutrons corresponding to the ground state, the level with  
 0,43 MeV and 4,65 MeV were found,  
 b) The angular distribution for the neutrons of the ground state and  
 the 1st level is  $\sigma(\theta) = 6,8 + 2,4 \cos^2(\theta) \text{ mb/steradian}$   
 c) The total reaction cross section (forming of ground state and 1st

Card 1/2



KALININ, S. P. and PANKRATOV, V. M.

"Fast Fission Cross-Sections."

paper to be presented at 2nd UN Intl. Conf. on the peaceful uses of Atomic Energy, Geneva, 1 - 12 13 Sept 58.



33085

S/638/61/001/000/007/056

B102/B138

24.6600

AUTHORS: Artemov, K. P., Kalinin, S. P., Samoylov, L. N.

TITLE: Proton scattering from  $\text{He}^3$  at 9.6, 8.6, 7.9, 6.8, and 5.5 Mev

SOURCE: Tashkentskaya konferentsiya po mirnomy ispol'zovaniyu atomnoy energii. Tashkent, 1959. Trudy. v. 1. Tashkent, 1961, 73-75

TEXT: The angular distribution curves were measured for protons of 9.6, 8.6, 7.9, 6.8, and 5.5 Mev (energies in the laboratory system) scattered in  $\text{He}^3$  gas targets. The 9.6-Mev protons came directly from the cyclotron, the other energies were obtained by appropriate slowing-down processes. The target vessel had a window closed by a 6-mg/cm<sup>2</sup> iron foil, and a pressure of about 800 mm Hg inside. The background ranged from 20% (9.6 Mev) to 70% (5.5 Mev). The proton flux at the target was measured by a beam catcher with integrator. The scattered protons were recorded by photographic plates 125 mm from the target center arranged at angles of 20-155°. The distribution curves were compared with theoretical curves obtained from the optical model. A qualitative agreement was found in Card 1/2

Proton scattering from  $\text{He}^3$  ...

33085  
S/638/61,001/000/007/056  
B102/B138

essence. [Abstracter's note: A figure not shown is mentioned in the text; it should give the results and show a comparison with the theoretical distribution curves.] There are 8 references: 2 Soviet and 6 non-Soviet. The four most recent references to English-language publications read as follows: Sweetman D. Phil. Mag. ser. 7, 46, 358, 1955; Lovberg R., Phys. Rev. 103, 1393, 1956; Bransden B., Robertson H., Proc. Phys. Soc., 72, 770, 1958; Famularo K. et al. Phys. Rev. 93, 928, 1954.

ASSOCIATION: Institut atomnoy energii AN SSSR (Institute of Atomic Energy AS USSR)

Card 2/2

X

33087

S/638/61/001/000/009/056

B102/B138

24,6300

AUTHORS: Vlasov, N. A., Kalinin, S. P., Ogloblin, A. A., Chuyev, V. I.

TITLE: (d,t) reaction on  $C^{12}$ ,  $F^{19}$ , and  $Al^{27}$  nuclei

SOURCE: Tashkentskaya konferentsiya po mirnomy ispol'zovaniyu atomnoy energii. Tashkent, 1959. Trudy. v. 1. Tashkent, 1961, 79-84

TEXT: The present investigations continue previous studies (ZhETF 1959, 27, 54) which had shown that in (d,t) reactions on  $Li^6,7$  and  $Be^9$  the excitation probability decreases rapidly with increasing level energy of the terminal nucleus. The excitation spectrum is here much more complicated than where only hole levels are excited, as neutrons may not only be extracted from outer (2s and 1d), but also from full 1p, shells. The triton spectra were obtained from the  $\beta$  activity of the resulting tritium collected in Al foils. It was eliminated from the plates by heating and conducted into a helium counter.  $F^{19}(d,t)F^{18}$  was investigated with a  $0.4 \text{ mg/cm}^2$  thick  $MgF_2$  target and an  $8.2 \text{ mg/cm}^2$  thick Teflon ( $CF_2$ ) target

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B102/B138

(d,t) reaction on  $C^{12}$ ,  $F^{19}$ , ...

at  $E_d = 20$  Mev,  $Al^{27}(d,t)Al^{26}$  at  $E_d = 19$  Mev and with a  $2.15 \text{ mg/cm}^2$  thick Al target. The Teflon target was also used to study the  $C^{12}(d,t)C^{11}$  reaction. The t-angular distributions were compared with results obtained from the Butler theory. The strongest triton group consists of two components ( $l=0$  and  $l=1$ ). The scheme produced for  $F^{18}$  level agrees with that of other authors. Fig. 6 shows the  $Al^{26}$  level scheme obtained by other authors together with transitions observed here. Tabulated results show that the (d,t) reactions on  $F^{19}$  and  $Al^{27}$ , like those on  $Li^7$  and  $Be^9$ , have a probability of excitation of the final nuclear levels which decreases rapidly with increasing level energy. The reduced widths of the 3-4 Mev levels are 3-10 times smaller than those of the ground state. Those of 5-7 Mev have 20-30 times less probability of excitation than the ground level. The 3.3-Mev  $F^{18}$  level ( $l=1$ ) has negative parity and comparatively high probability of excitation (width: 0.73%) since a neutron is torn out of the p shell. In  $Al^{27}$ , extraction of a neutron with  $l = 2$  is much more probable than one with  $l = 0$ , i.e., the inner neutrons of  $Al^{27}$  are mainly in the d-state with a small admixture of s-state.  $r_0$  increases with level energy from  $4.5 \cdot 10^{-13} \text{ cm}$  ( $C^{12}$  ground state) to

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X

33057

S/638/61/001/000/009/056  
B102/B138

(d,t) reaction on  $C^{12}$ ,  $F^{19}$ , ...

$9 \cdot 10^{-13}$  cm ( $F^{18}$ , 5.9 Mev). The authors thank D. P. Grechukhin and V. G. Neudachin for a discussion, and the cyclotron team for the irradiations. There are 7 figures, 2 tables, and 15 references: 1 Soviet and 14 non-Soviet. The four most recent references to English-language publications read as follows: Kuchner J. A., Almqvist E., Bromley D. A. Phys. Rev. Lett., 1, 260, 1958. Kuchner J. A., Almqvist E., Bromley D. A. Bull. Am. Phys. Soc., II, 3, 27, 1958. Almqvist E., Bromley D. A., Kuchner J. A. Bull. Am. Phys. Soc., II, 3, 27, 1958. Bennet E. F. Bull. Am. Phys. Soc., II, 3, 26, 1958.

ASSOCIATION: Institut atomnoy energii AN SSSR (Institute of Atomic Energy AS USSR)

Card 3/A<sub>3</sub>

X

21(7) SOV/56-36-2-53/63  
AUTHORS: Bogdanov, G. F., Vlasov, N. A., Kalinin, S. P., Rybakov, B. V.,  
Samoylov, L. N., Sidorov, V. A.

TITLE: The Reaction  $T(p,n)He^3$  at Proton Energies of 7 to 12 Mev  
(Reaktsiya  $T(p,n)He^3$  pri energii protonov 7 - 12 MeV)

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1959,  
Vol 36, Nr 2, pp 633-636 (USSR)

ABSTRACT: The present paper deals with the measurement of the cross sections and of the angular distributions of the reaction  $T(p,n)$  in the interval 7 - 12 Mev of proton energies. Moreover, the authors tried to measure the polarization of the neutrons in this reaction. A solid tritium-zirconium target (thickness 20  $\mu$ ) was bombarded by protons accelerated to 12 Mev in a cyclotron. The neutron flux was measured by a telescope consisting of 4 proportional counters and also by a spectrometer. The cross sections are measured with a precision of 10%. The first diagram shows the results of the measurement of the cross section under the angle  $0^\circ$  and previously published results of the measurements in the energy interval of 1 - 7 Mev. The cross section is approximately constant in the investigated energy interval, and it increases

Card 1/3



The Reaction  $T(p,n)He^3$  at Proton Energies

SOV/56-56-2-53/63  
of 7 to 12 Mev

slightly at energies of 11 - 12 Mev. The second diagram gives the angular distributions of the neutrons at the energies 8.8; 8.9; and 12 Mev. The high forward-backward anisotropy indicates an intense interference of the states of different parity. The curves given in the figures correspond to expressions of the type  $\sigma(\theta) = A + B\cos\theta + C\cos^2\theta + D\cos^3\theta + E\cos^4\theta$  in the c.m.s.. The coefficients of these expressions were calculated by the method of least squares and they are given in the following table:

$E_p$ (Mev)	A	B	C	D	E	$\sigma_t$ (mb)
6.8	11.1	11.3	24.4	-51.4	25.3	305
8.9	13.3	1.0	1.3	-28.4	27.3	241
12.0	13.0	7.5	-23.7	-24.9	44.6	176

The third diagram shows the energy dependence of the reaction. The investigation of the polarization of the neutrons produced in the reaction  $T(p,n)He^3$  is important for the determination of the characteristics of the excited states of an  $\alpha$ -particle. The inverse reaction  $He^3(n,p)T$  was investigated according to a method suggested by H. H. Barshall. According to this method,

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The Reaction  $T(p,n)He^3$  at Proton Energies

307/56-36-2-53/66  
of 7 to 12 Mev

the absolute values of the polarization can be measured without an analyzer of known polarization properties. According to the measurements discussed in the present paper, for  $E_p \lesssim 10$  Mev and for the angles satisfying Marshall's condition asymmetry is not higher than 5%. A noticeable asymmetry was observed in the case  $\theta_1 = \theta_2 = 40^\circ$ , and this asymmetry indicates a polarization of the neutrons.  $\theta_1$  denotes the angle under which the chamber filled with  $He^3$  (10 atmospheres) was placed in the neutron beam. By means of a telescope of proportional counters, the right-left asymmetry of the flying off of protons from the reaction  $He^3(n,p)T$  under the angle  $\theta_2$  was measured. There are 3 figures, 1 table, and 9 references, 6 of which are Soviet.

SUBMITTED: November 17, 1958

Card 3/3

21(7)

AUTHORS: Artemov, K. P., Kalinin, S. P., SOV/56-37-3-12/62  
Samoylov, L. N.

TITLE: The Scattering of Protons on  $\text{He}^3$  at Energies of 5 - 10 Mev

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1959,  
Vol 37, Nr 3(9), pp 663-666 (USSR)

ABSTRACT: With a view of explaining the states and the structure of the  $\text{Li}^4$ -nucleus various authors already investigated the proton scattering on  $\text{He}^3$ -nuclei (Refs 1-5). The present paper gives a report on investigations at the proton energies 9.6, 8.6, 7.9, 6.8, and 5.5 Mev. The 9.6 Mev protons were obtained direct from the cyclotron, the protons of lower energies were obtained by slowing down. The gas target ( $\text{He}^3$  with 800 Hg) had a window that was closed by means of an iron foil ( $6 \text{ mg/cm}^2$ ). The proton flux impinging upon the target was measured by means of a Faraday cylinder, the scattered protons were recorded by means of photographic plates. The measured differential proton cross sections on  $\text{He}^3$  are shown in diagrams for the five  $E_p$ -values ( $E_p$  is given in the

Card 1/2

The Scattering of Protons on  $\text{He}^3$  at Energies  
of 5 - 10 Mev

SOV/56-37-3-12/62

laboratory system)(Figs 1-5), viz. in dependence on the scattering angle  $\theta$ . All curves have low minima between 90 and 120°. The experimentally obtained results are compared with the theoretical results obtained by other authors under different assumptions with respect to the nature of the nuclear forces (The symmetric and the Serber variant). Above all, results obtained by Innas et al. (Ref 4) are mentioned, which had been obtained by means of the optical model and in consideration of the spin-orbit coupling. In figure 2 (curve C) the  $\sigma(\theta)$ -results of this paper for  $V_0=36$  Mev are plotted; qualitative agreement is found. The curves A in all diagrams have been calculated according to Serber's type, and curve B for the assumption of symmetry. The former show better agreement with the experiment. From the energy dependence of the cross sections it is not possible to draw conclusions as to the discrete levels of the  $\text{Li}^4$ -nucleus; it may, however, be said that this nucleus possesses no state with a life-time essentially exceeding the collision time. There are 5 figures and 8 references, 2 of which are Soviet.

SUBMITTED: April 17, 1959  
Card 2/2

VLASOV, N.A.; KALININ, S.P.; OGLOBLIN, A.A.; CHUYEV, V.I.

(d, t)-Reaction on medium and heavy nuclei. Zhur. eksp. i teor.  
fiz. 38 no.1:280-282 Jan '60. (MIRA 14:9)  
(Nuclear reactions) (Tritons (Tritium ions))

85681

Neutron Spectra of the d+p Reaction

S/056/60/038/006/023/049/XX  
B006/B070

2.5 msec; the channel width of the time analyzer was about 0.8 msec. The recording device had 256 channels with a capacity of  $2^{16}$  pulses per channel. For illustration, the distribution of the neutrons from  $H(d,n)2p$  is given (Fig. 1) as a function of their time of flight at an angle of  $0^\circ$  with the deuteron beam,  $E_d$  being 18.6 Mev. The target - counter distance was 2.8 mm, the counter threshold 3.2 Mev, and the time analyzer channel width 0.836 msec. Figs. 2 and 3 show the energy distribution of neutrons in the laboratory system of the two reactions studied. The path lengths in the first case were 7m (c) and 2.8m (o), and in the second case, 5.15 m (o) and 1.58 m (o). The neutron production cross sections at  $0^\circ$  for the reaction  $H(d,n)2p$  was  $(150 \pm 15)$  mb/steradian, and for the reaction  $D(p,n)2p$   $(47 \pm 5)$  mb/steradian. In the center-of-mass system of the three nucleons, the cross sections were  $(20 \pm 2)$  mb/steradian and  $(11 \pm 1)$  mb/steradian, respectively, at  $0^\circ$  and  $180^\circ$  with the deuteron beam. Figs. 4 and 5 show the neutron spectra of the reactions  $d+p \rightarrow 2p+n$  at angles of 0 and  $180^\circ$ , respectively, with the deuteron beam, and for  $E_d=4.0$  Mev and  $E_d=3.5$  Mev, respectively. In addition to a peak on the edge, the spectrum at  $180^\circ$  shows a peak also at a neutron energy of

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85681

Neutron Spectra of the d+p Reaction

S/056/60/038/006/023/049/KK  
B006/B070

0.6 Mev whose position corresponds to a zero relative velocity of the neutron and one of the protons in the final state. The results show that nucleon pairs of low kinetic energy of relative velocity have a large probability of formation in the reaction  $d+p \rightarrow 2p+n$ . Finally, the explanation of the spectra by pair interaction between nucleons in the final state is discussed and compared with the results of other authors. A. B. Migdal, V. V. Komarov, and A. M. Popova are mentioned. There are 5 figures and 10 references: 6 Soviet and 4 US.

SUBMITTED: February 15, 1960

Card 3/3

86925

S/056/60/039/005/042/051  
B006/B077

24.6600

AUTHORS: Vlasov, N. A., Kalinin, S. P., Ogloblin, A. A.,  
Chuyev, V. I.

TITLE: The ( $\alpha$ ,t) Reaction With  $\text{Li}^7$ ,  $\text{Be}^9$ , and  $\text{Na}^{23}$

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1960,  
Vol. 39, No. 5(11), pp. 1468 - 1470

TEXT: The authors report on experimental investigations of the ( $\alpha$ ,t) reaction with  $\text{Li}^7$ ,  $\text{Be}^9$ , and  $\text{Na}^{23}$  with an  $\alpha$  energy of 40 Mev in a wide excitation energy range. The final nuclei  $\text{Be}^8$ ,  $\text{B}^{10}$  and  $\text{Mg}^{24}$  were also obtained through (d,n) stripping reactions and (d,t) adhesion reactions. The triton spectra, like in investigations of the (d,t) reaction, were determined from the tritium activity which had accumulated on the foils arranged around the target. Foils of the investigated element of  $4 \text{ mg/cm}^2$  thickness served as targets. The results of these experiments are only illustrated in diagrams. Fig. 1 shows the angular triton distribution;

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86925

The  $(\alpha, t)$  Reaction With  $\text{Li}^7$ ,  $\text{Be}^9$ , and  $\text{Na}^{23}$

S/056/60/039/005/042/051  
B006/B077

$E^*$  denotes the level of the final nucleus; the curve shows the calculated square of the spheric Bessel function for given  $l$ - and  $R_0$ -values. Fig. 2 shows the triton spectra recorded under small angles. In all three cases lines can be observed that correspond to several states of the final nucleus. The angular distribution of most groups can be well described by the squared spherical Bessel function

$[j_{l+1/2}(qR_0)]^2$ . Fig. 3 represents a comparison of the level excitation probabilities of the  $\text{Be}^8$ ,  $\text{B}^{10}$ , and  $\text{Mg}^{24}$  nuclei in  $(d, n)$ ,  $(\alpha, t)$ , and  $(d, t)$  reactions. The maximum differential cross sections for the  $(\alpha, t)$  and the  $\text{Na}^{23}(d, n)\text{Mg}^{24}$  reactions and the reduced widths for the  $(d, t)$  and the  $\text{Be}^9(d, n)\text{B}^{10}$  reactions are used for ordinates. There are 3 figures and 10 references: 3 Soviet, 2 British, and 5 US.

SUBMITTED: July 23, 1960

Card 2/5

88435

S/056/60/039/006/024/063  
B006/B056

26.222W-

AUTHORS: Vlasov, N. A., Kalinin, S. P., Ogloblin, A. A., Chuyev, V. I.

TITLE: The (d,t) Reaction on Zirconium Isotopes

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1960,  
Vol. 39, No. 6(12), pp. 1615 - 1617

TEXT: In order to study the effect produced by external neutrons, the authors investigated the (d,t) reactions on  $Zr^{91,92,94}$ , which have 1, 2, and 4 neutrons above the closed shell with  $N = 50$ . The triton spectra were, like in earlier papers (Refs.1-3) determined according to the  $\beta$ -activity of tritium. The tritons emitted from a target of 3-5 mg/cm<sup>2</sup> were caught in piles of aluminum foils arranged under different angles at a distance of 15 cm from the target. The deuterons were accelerated in the cyclotron to 20 Mev. The targets were made from zirconium oxide, enriched in  $Zr^{91}$  to 79.5%, in  $Zr^{92}$  to 88.6%, and in  $Zr^{94}$  to 90.0%, respectively. All three isotopes displayed the existence of two state groups - the first

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The (d,t) Reaction on Zirconium Isotopes

S/056/60/039/006/024/063  
B006/B056

corresponds to the ground state, the second to an excited state. The angular distributions of these groups are shown in Fig.2 (upper row: ground state). To the ground-state group there corresponds an  $l = 2$ ; i.e. to a  $d_{5/2}$  state, the excited group  $l = 1$  and 4 (width  $\sim 2$  Mev). One of the groups corresponds to an ejection of neutrons from a closed shell with neutron binding energies, which are approximately equal and are about 11 - 13 Mev for all zirconium isotopes. In the  $Zr^{90}(d,t)$  reaction only this group is to be observed; its intensity decreases slowly from  $Zr^{90}$  to  $Zr^{94}$ . The other group corresponds to an ejection of an external neutron. The intensity of this group is almost proportional to the number of super-magic neutrons. There are 3 figures and 4 references: 3 Soviet and 1 US.

SUBMITTED: July 23, 1960

Card 2/2

26.2240

S/056/60/039/006/025/063  
B006/B056

AUTHORS: Vlasov, N. A., Kalinin, S. P., Ogloblin, A. A., Chuyev, V.I.

TITLE: The Reaction  $B^{11}(d,t)B^{10}$

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1960,  
Vol. 39, No. 6(12), pp. 1618 - 1620

TEXT: The  $B^{11}(d,t)B^{10}$  reaction was investigated at deuteron energies of 20 Mev; as was the case also in earlier papers (Refs.1-4), the triton spectra according to the  $\beta$ -activity of tritium were accumulated in foil piles around the target (3 mg/cm<sup>2</sup> boron enriched in  $B^{11}$  to 81%, upon a 0.4 mg/cm<sup>2</sup> thick Mg backing). Fig.1 shows the triton spectrum recorded at 11°,  $B^{10}$  being produced in the ground and (known) excited states of 0.72, 1.74, 2.15, 3.58, 5.1, and 6.2 Mev. Numerical results of the measurements are tabulated. Also the distribution of the reduced widths  $\theta^2$  of the various levels of (d,t) and (d,n) reactions were investigated. The investigations indicated that excitation of the lower levels of  $B^{10}$  occurs

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88435

The Reaction  $B^{11}(d,t)B^{10}$

S/056/60/039/006/025/063  
B006/B056

as a result of the ejection of a neutron with  $l = 1$ ; the probability for the production of  $B^{10}$  in the ground state is several times higher than that for its production in excited states. There are 2 figures, 1 table, and 6 references: 4 Soviet, 1 US, and 1 Dutch.

SUBMITTED: July 23, 1959

Text to the table: 1)  $B^{10}$  level, Mev; 2)  $\sigma_{\max}$  in the c.m.s., mb/steradian; 3) ground state; 4) isotropic.

Уровень $B^{10}$ , Mev 1	$B^{11}(d,t)B^{10}$				$B^{10}(d,t)B^{10}$	
	l	$r_0, \phi$	$\sigma_{\max}$ в с. ц. м. 2 мбн/стерад	$\theta, \%$	1	2
3						
Основное состо- яние	1	6,0	6,4 (15°)	2,47	1	1,7
0,72	1	6,0	1,75(15°)	0,71	1	3,5
1,74	1	7,0	0,95(15°)	0,39	1	2,5
2,15	1	6,0	1,55(15°)	0,72		
3,58	(1)		0,45(15°)	~0,1	1	0,7
4,77			<0,2 (15°)	<0,1 (l=1)	(1)	0,3
5,11	} (1)					
5,16			0,0 (10-15°)	~0,3	(0)	1,3
5,93					(1)	(0,5)
6,2		изотропно 4	0,6		(1)	0,5

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27522  
S/089/61/0:1/004/003/008  
B102/B:36

21.3000

AUTHORS: Vlasov, N. A., Kalinin, S. P.

TITLE: Physical research at the cyclotron laboratory of the  
Institute of Atomic Energy imeni I. V. Kurchatov

PERIODICAL: Atomnaya energiya, v. 11, no. 4, 1961, 345 - 355

TEXT: The article gives the most important data concerning the cyclotron of the Institut atomnoy energii im. I. V. Kurchatova (Institute of Atomic Energy imeni I. V. Kurchatov), and some experiments are described. A complete description of this cyclotron may be found in Ref. 1 (L. M. Nemenov et al., Atomnaya energiya, II, No. 1, 36 (1957)). It was constructed in 1947; in the following years, it was improved by focusing the beam onto a target at 12 m distance. In all operating conditions (parameters are given in a table), the currents reaching a target area of  $1 \text{ cm}^2$  amount to some ten microamperes. The electromagnet of the cyclotron weighs 330 tons and has a pole-piece 1.5 m in diameter. With some improvements such as phase and frequency stabilization, the cyclotron can now also be used as a pulsed fast-neutron source for a time-of-flight

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Physical research at the...

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S/089/61/011/004/003/008  
B102/B138

spectrometer. By adjusting the diaphragm system it is now possible to produce intense and highly monochromatic (energy spread  $\leq 0.2\%$ ) ion beams. One of the main fields of research in the cyclotron laboratory is that of fast-neutron spectrometry. In (d,n) and ( $\alpha$ ,n) reactions at  $E_d = 20$  Mev and  $E_\alpha = 40$  Mev respectively, neutrons can be obtained with energies up to 40 Mev. The first experiments in this field were in the production of monochromatic neutrons of up to 7 Mev by the reaction  $T(p,n)He^3$ . Time-of-flight spectrometry experiments were started in 1954. The resolving time of the recording apparatus must be of the same order as the duration of a neutron pulse, i. e.,  $< 2$   $\mu$ sec. In normal conditions the width of a neutron pulse was not more than 10  $\mu$ sec. Investigation of the relationship between pulse shape and cyclotron parameters showed that it was possible to produce doublet pulses without any effect of the pulse width upon resolution. The characteristic resolving time of the spectrometer was 2.5  $\mu$ sec. The first single-channel modification of the spectrometer was developed in 1956. Now, a multi-channel spectrometer is in operation, which can be used directly as a high-speed slow-motion camera. It is described in detail by B. V. Rybakov and V. A. Sidorov (cf. Atomnaya

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S/089/61/011/004/003/008

B102/B138

Physical research at the...

energiya, 5, no. 2, 135 (1958)). As a final recorder, a 256-channel analyzer of the ЭЛА-2 (ELA-2) type is used. The spectra of fast neutrons from many nuclear reactions, especially of such which may be used for production of monochromatic neutrons, have been investigated. The upper energy limit in these experiments was 15 Mev. The authors discuss special experiments carried out with the use of fast-neutron spectrometry. Some (p,n) and (d,n) reactions in D, T, and He are described in detail. In (d,n) reactions, the  $0^0$  neutron spectrum had a peak at  $E_n \approx E_d/2$ . A

detailed investigation of the continuous neutron spectra showed that the shape of spectra is, in part determined by final-state pair interaction of the particles produced. In D(d,n) and He<sup>3</sup>(d,n) reactions, no final-state pair interaction was found. Here the shape of spectra is determined by the energy distribution of three particles. Other fast-neutron experiments have been carried out to study the statistical properties of the nucleus. A third group of such experiments covered the measurement of fission cross sections. A special device has been constructed to study nuclear reactions in which tritium is produced. (For details see M. A. Vlasov, A. A. Oglobin. Yadernyye reaktsii pri malykh i srednykh energiakh -

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S/089/61/011/004/003/008  
B102/B138

Physical research at the...

Nuclear reactions at low and medium energies, M. Izd-vo AN SSSR, 1958).  
Some results of (d,t) reactions in  $Li^7$ ,  $O^{18}$ ,  $F^{19}$ , and  $Zr^{91,92,94}$  are  
discussed. There are 14 figures and 23 references: 17 Soviet and 6 non-  
Soviet. The three most recent references to English-language publications  
read as follows: B. W. Rybakov, W. A. Sidorov, N. A. Vlasov. Nucl. Phys-  
ics, 23, 491 (1961); E. Hamburger, B. Cohen, R. Price. Preprint, 1960;  
N. Lassen, V. Sidorov. Nucl. Physics, 19, 579 (1960).

SUBMITTED: May 27, 1961

Card 4/4

89255

S/C48/61/025/001/021/031  
R029/R063

24 6600

AUTHORS: Vlasov, N. A., Kalinin, S. P., Ogloblin, A. A.,  
Chuyev, V. I.

TITLE: (d,t) Reactions of  $O^{16}$ ,  $O^{18}$ ,  $Mg^{24}$ ,  $Mg^{25}$ , and  $Mg^{26}$  nuclei

PERIODICAL: Izvestiya Akademii nauk SSSR. Seriya fizicheskaya,  
v. 25, no. 1, 1961, 115-120

TEXT: This is the continuation of previous papers (Refs. 1, 2, 3) on the (d,t) reaction. A study of the latter makes it possible to determine the degree of conservation of single-particle states in the inner, completely filled shells of nuclei. If these states are conserved, it is possible to determine the neutron binding energy in the shells or the neutron transition energy between them. The nuclei of  $O^{16}$ ,  $O^{18}$ ,  $Mg^{24}$ ,  $Mg^{25}$ , and  $Mg^{26}$  have completely filled 1s and 2p shells and different numbers of neutrons in the outer shell  $1d_{5/2-2s_{1/2}}$ . Like in Refs. 1-3 and 7, the deuteron energy was found to be about 20 Mev, and the triton spectrum was determined from the activity of tritium.  $MgO^{18}$  (60%  $O^{18}$ ),  $Mg^{25}O$  (86%  $Mg^{25}$ ),

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89255

S/048/61/025/001/021/031  
1029/0063

24 6600

AUTHORS: Vlasov, N. A., Kalinin, S. P., Ogloblin, A. A.,  
Chuyev, V. I.

TITLE: (d,t) Reactions of  $O^{16}$ ,  $O^{18}$ ,  $Mg^{24}$ ,  $Mg^{25}$ , and  $Mg^{26}$  nuclei

PERIODICAL: Izvestiya Akademii nauk USSR. Seriya fizicheskaya,  
v. 25, no. 1, 1961, 115-120

TEXT: This is the continuation of previous papers (Refs. 1, 2, 3) on the (d,t) reaction. A study of the latter makes it possible to determine the degree of conservation of single-particle states in the inner, completely filled shells of nuclei. If these states are conserved, it is possible to determine the neutron binding energy in the shells or the neutron transition energy between them. The nuclei of  $O^{16}$ ,  $O^{18}$ ,  $Mg^{24}$ ,  $Mg^{25}$ , and  $Mg^{26}$  have completely filled 1s and 2p shells and different numbers of neutrons in the outer shell  $1d_{5/2}-2s_{1/2}$ . Like in Refs. 1-3 and 7, the deuteron energy was found to be about 20 Mev, and the triton spectrum was determined from the activity of tritium.  $MgO^{18}$  (60%  $O^{18}$ ),  $Mg^{25}O$  (86%  $Mg^{25}$ ),

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89255

(d,t) Reactions of  $O^{16}$ ,  $O^{18}$ , ...

S/048/61/025/001/021/031  
B029/B063

the d-neutron, while in the case of  $F^{19}$ , it is that of the s-neutron. The 3.06-Mev and 5.3-Mev levels are excited by ejection of a p-neutron. It is noted that the 3.058-Mev level has a negative parity and  $1/2$ -spin. The 3.06-Mev and 5.38-Mev states are of the hole type. In this way, the authors were able to calculate the values of neutron binding energy in the  $O^{18}$  and  $F^{19}$  nuclei for different states. The ground state of  $Mg^{23}$  and a group of states are very likely to be excited in the reaction  $Mg^{24}(d,t)Mg^{23}$  at an energy of about 2.5 Mev. The angular distribution of the first group (Fig. 3) is in good agreement with  $l = 2$ . The angular distribution of the second group may have different components corresponding to  $l = 2$ ,  $l = 1$ , etc. In the case of  $Mg^{24}$ , the s- and d-shells are probably much less intermixed than in the case of  $O^{18}$  and  $F^{19}$ . The group of tritons appearing in the reaction  $Mg^{25}(d,t)Mg^{24}$  corresponds to the formation of  $Mg^{24}$  in the ground state and in excited states having energies

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(d,t) Reactions of  $O^{16}$ ,  $O^{18}$ , ...

89255

S/048/61/025/001/021/031  
B029/B063

of 1.37, 4.12, 4.23 (not resolved), 6.0, and 7.8 Mev. Five groups of tritons have been found in the reaction  $Mg^{26}(d,t)Mg^{25}$ . These groups correspond to the well-known levels of the  $Mg^{25}$  nucleus. The results obtained for the reaction  $Mg^{26}(d,t)Mg^{25}$  can be explained by the shell model if the neutron in  $Mg^{26}$  is in the d-state, with a small admixture of the s-state. The principal results of the present work are illustrated in Table 3. The authors thank the co-workers of the cyclotron laboratory for irradiations; V. S. Zolotarev and his co-workers for the preparation of enriched  $Mg^{25}$  and  $Mg^{26}$  isotopes; and V. M. Strutinskiy and A. I. Baz' for a discussion. This is the reproduction of a lecture read at the Tenth All-Union Conference on Nuclear Spectroscopy, Moscow, January 19-27, 1960. There are 6 figures, 3 tables, and 11 references: 4 Soviet-bloc and 7 non-Soviet-bloc.

ASSOCIATION: Institut atomnoy energii im. I. V. Kurchatova  
(Institute of Atomic Energy imeni I. V. Kurchatov)

Card 4/4

88564

S/020/61/136/001/009/037  
B019/B056

24.6600 (1138, 1160, 1158)

AUTHORS: Brill', O. D., Vlasov, N. A., Kalinin, S. P., and Sokolov, L. S.

TITLE: The (n,2n)-Reaction Cross Section for  $C^{12}$ ,  $N^{14}$ ,  $O^{16}$  and  $F^{19}$  in the Energy Interval of From 10 - 37 Mev

PERIODICAL: Doklady Akademii nauk SSSR, 1961, Vol. 136, No. 1, pp. 55-57

TEXT: In the tests described here, the reactions  $D(d,n)He^3$  and  $T(d,n)He^4$  were used for the neutron production; they were induced by means of 20 Mev deuterons. The experiments were made on the cyclotron of the Institut atomnoy energii AN SSSR (Institute of Atomic Energy, AS USSR). The neutron energy was changed into platinum foils by slowing-down. Solid T+Zr-targets and gaseous deuterium targets were used. In bombarding the deuterium and tritium targets with fast deuterons, also neutrons with a continuous spectrum were formed besides the monochromatic neutron group, due to (d,pn) and (d,2n) reactions. The intensity of the continuous spectrum exceeds that of the monochromatic spectrum somewhat, but there exists an upper energy limit, which is about  $E_n \simeq E_d - 4$  Mev. For the

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The (n,2n)-Reaction Cross Section for  $C^{12}$ ,  
 $N^{14}$ ,  $O^{16}$  and  $F^{19}$  in the Energy Interval of  
 From 10 - 37 Mev

88564

S/020/61/136/001/009/037

B019/B056

recording of the relative (n,2n) reaction yield with various neutron energies, special carbon,  $NH_4NO_3$  and  $CF_2$  specimens were produced. They were irradiated with neutrons at an angle of  $0^\circ$  under standard conditions; the  $\beta$ -particles were measured by means of a Geiger counter. The decay curves of the specimens were determined. The background caused by the target backing in the case of  $O^{15}$  amounted to 30%, with  $N^{13}$  to 80%, and in the case of  $F^{18}$  to 88%. The absolute cross section of the (n,2n) reaction was determined for carbon at  $E_n = 34$  Mev, and for fluorine at  $E_n = 25$  Mev and 14 Mev. The absolute cross section for nitrogen and oxygen was measured by comparing the annihilation  $\gamma$ -activity of  $NH_4NO_3$  and water with the  $\gamma$ -activity of a carbon specimen by means of a scintillation counter. The results are graphically represented in Figs. 1-4. B.V. Rybakov and L. S. Sokolov are mentioned. There are 4 figures and 14 references: 4 Soviet, 1 French, 1 Canadian, and 1 US.

PRESENTED: July 8, 1960, by A. P. Aleksandrov, Academician

Card 2/4

VLAZOV, N.A.; KALININ, S.P.; RYBAKOV, B.V.; SIDOROV, V.A.

[Neutron spectrum of the  $d + p$  reaction] Spektry neitronov  
reaktsii  $d + p$ . Moskva, In-t atomnoi energii AN SSSR, 1960.  
15 p. (MIRA 17:3)



L 27307-65 EWT(m)/EPA(w)-2/ENA(m)-2 Pub-10/Pt-10 IJP(c)  
ACCESSION NR: AP5002140 S/0120/64/000/006/0028/0029 4/0  
35  
6

AUTHOR: Antonov, A. V.; Vasil'yev, F. I.; Venikov, N. I.; Kalinin, S. P.;  
Sokolov, N. I.; Khaldin, N. N.; Khoroshavin, B. I.; Chumakov, N. I.

TITLE: Changing the IAE cyclotron into a controllable-ion-energy mode of operation

SOURCE: Priboiy i tekhnika eksperimenta, no. 6, 1964, 28-29

TOPIC TAGS: cyclotron, IAE cyclotron

ABSTRACT: The adoption of rapid energy control in the 1.5-meter IAE cyclotron with preservation of a good ( $\pm 0.3-0.4\%$ ) monoenergetic characteristic and short duration (2-4 nsec) of accelerated-ion clusters, was predicated upon the following changes introduced into the cyclotron: (1) Correction of magnetic field by the currents in additional windings within 5-14 koe; (2) Provision of a dee-type slit ion optical device suitable for the entire range of accelerated ions; (3) Replacing

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ACCESSION NR: AP5002140

the VCh-200 h-f oscillator by a GU-300 which can be tuned without additional neutralization within 8-13 Mc; (4) Introduction of a remote control of dees position; (5) Correction of optical properties of the system guiding the output beam. As a result of the above measures, the type and energy of particles can be changed in less than an hour's time; particulars are tabulated. Orig. art. has: 1 figure and 2 tables.

ASSOCIATION: Institut atomnoy energii (Institute of Atomic Energy)

SUBMITTED: 20Nov63

ENCL: 00

SUB CODE: NP

NO REF SOV: 005

OTHER: 000

Card 2/2

L 27229-65 EWT(m)/EPA(w)-2/EWA(n)-2 Pub-10/Pt-10 IJP(c)

ACCESSION NR: AP5002141

S/0120/64/000/006/0010/0032

19  
35

3

AUTHOR: Antonov, A. V.; Blukhov, M. V.; Venikov, N. I.; Kalinin, S. P.;  
Kurashov, A. A.; Perov, P. Ya.; Chesalov, A. A.

TITLE: Reducing the repetition frequency of ion clusters in the LAE cyclotron

19

SOURCE: Prihory i tekhnika eksperimenta, no. 6, 1964, 30-32

TOPIC TAGS: cyclotron, LAE cyclotron

ABSTRACT: A system intended for a fourfold reduction of the repetition frequency of ion clusters on the cyclotron target is described. The ions are deflected in the vertical plane by a h-f sinusoidal voltage applied to a special deflecting system placed in the ion duct; admitting the required clusters to the target takes place at zero-voltage moments. Formulas for designing the deflecting-electrode shape and calculating the deflecting voltage are supplied. A block diagram of the electronic system is explained. The system can be tuned within 1.15-1.75 Mc.

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L 27229-65

ACCESSION NR: AP5002141

"The authors wish to thank N. N. Khaldin, V. I. Lamunin, and P. I. Vasil'yev for designing the system; Yu. V. Korshunov for calculating the tuned circuit of the deflecting system; R. A. Ariskina, B. I. Khoroshavin, and Ye. I. Rybakov for their help in the preparation of experiments; and A. A. Ogloblin and V. M. Pankratov for their constant interest in the project." Orig. art. has: 1 figure and 8 formulas.

ASSOCIATION: Institut atomnoy energii (Institute of Atomic Energy)

SUBMITTED: 19Nov63

ENCL: 00

SUB CODE: NF

NO REF SOV: 002

OTHER: 000

Card 2/2

KALINYIN, S.

"Prospective Development of the Electrification of Soviet Railways. (Tr. from the Russian.)" p. 126, (KOZLEKEDESTUDOMANYI SZEMLE, Vol. 3, no. 4, Apr. 1953, Budapest, Hungary)

SO: Monthly List of East European Accessions, LC, Vol. 3, No. 5, May 1954/Unclassified

KALININ, S.S., inzhener; ZHARIN, A.I., inzhener.

Improving the design of motorcar sections. Zhel.dor.transp.  
37 no.7:28-29 J1 '56. (MLRA 9:8)  
(Railroad motorcars)

KALININ, S.S., inzhener.

Results of operating electric locomotives on single-phase industrial  
frequency in France. Zhel.dor.transp. 38 no.10:84-86 0 '56. (MLRA 9:11)  
(France--Electric locomotives)

KALININ, S.S.

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(Continued on next card)



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tekhn. nauk, retsenzent; FAMINSKIY, G.V., kand.tekhn.  
nauk, retsenzent; POGOVA, Ye.N., inzh., retsenzent;  
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